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AUSTRALIAN PLANT DISEASE RECORDER

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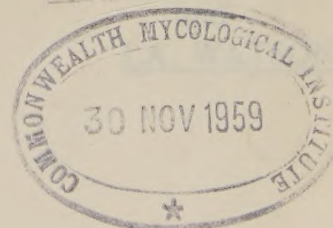
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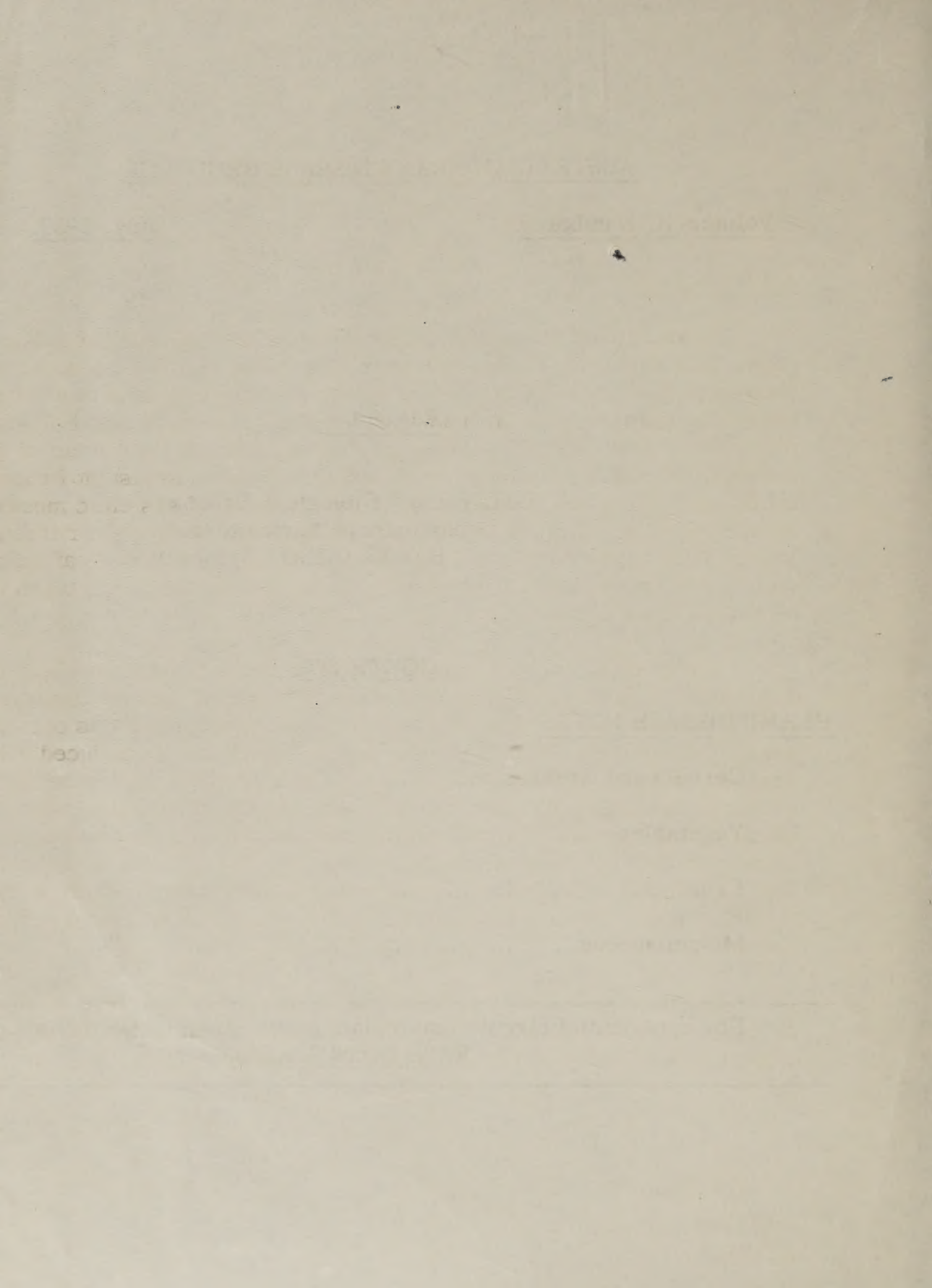
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For confidential circulation to plant pathologists in Australia -
PLEASE DO NOT ABSTRACT





PLANT DISEASE NOTES

CEREALS AND GRASSES

A VIRUS IN WHEAT:

In an acre of new wheat cross, grown out-of-season for bulking (sown in February), at Carroll near Gunnedah, N.S.W., a few plants showed symptoms of dwarfing and streak mosaic suggestive of a virus infection, when inspected at heading during the last week in April. These plants were collected and mechanical sap-inoculation from them on to ten-day old wheat seedlings of Federation, Mildew Resistant Federation, and Little Club, resulted in the development of systemic mosaic symptoms on some of the inoculated seedlings twelve days after inoculation. This indicated that the plants collected at Carroll were affected with a sap-transmissible virus, the precautions having been taken to eliminate other causal factors.

Since this is the first record of a virus disease on wheat in Australia, it is interesting to speculate as to why it was not observed before in normal season wheat, and why it was revealed by this out-of-season wheat crop. It is possible that indigenous or introduced wild grasses, mainly annuals, are affected with this virus, but since their growing season is normally from August to March, any transmission to wheat crops grown in the normal season would be too late to become evident in the maturing wheat plants in September. Also it is possible that the natural vectors are only active or present in summer and early autumn, when they could inoculate wheat should it be grown in that period.

Further work is in progress to characterise the virus, to discover its host range, natural reservoir, and field transmission, and to examine its potential threat to the wheat industry.

N.H. WHITE.
and
I.A. WATSON

School of Agriculture,
SYDNEY

PLANT DISEASE NOTES

CEREALS AND GRASSES

A VIRUS IN WHEAT

In an acre of new wheat cross, grown out-of-season for bulking (sown in February), at Carrillo near Gunnedah, N.S.W., a few plants showed symptoms of dwarfing and attack insects suggestive of a virus infection, when inspected at heading during the last week in April. These plants were collected and mechanical sap-inoculation from them on to ten-day old wheat seedlings at Federation, Midway between Federation and Little Club, resulted in the development of a systemic mosaic. This indicated that the plants collected at Carrillo were affected with a sap-transmissible virus, the presence of which being taken as evidence of a virus disease.

Since this is the first record of a virus disease on wheat in Australia, it is interesting to speculate as to why it was not observed before in normal season wheat, and why it was revealed by the out-of-season wheat crop. It is possible that indigenous or introduced grasses, mainly annuals, are affected with this virus, but since the growing season is normally from August to March, any transmission of virus to wheat grown in the normal season would be too late to become evident in the maturing wheat plants in September. It is possible that the natural vector is only active or present in summer and early autumn, when they could inoculate wheat should it be grown in the period.

Further work is in progress to characterize the virus, to cover the host range, natural resistance, and field transmission, and examine the potential threat to the wheat industry.

N. H. WHITE

and

I. A. WATSON

A SUSPECTED VIRUS DISEASE OF WHEAT:

In March of this year Drs. A.T. Pugsley and F.C. Butler of the Agricultural Research Institute, Wagga Wagga, drew our attention to an apparent leaf disorder among wheat varieties in breeding plots. Plants showing chlorotic streaks and irregular chlorotic striping were removed to Canberra for further study.

Sap transmissions to seedling wheat plants resulted in mild chlorotic leaf streaks and premature yellowing of the lower leaves, in the varieties Insignia and Koala. The wheat varieties Eureka and Glenwari developed somewhat milder symptoms as also did the variety Gabo, which was infected in only a small percentage of cases. Transmission to these wheat varieties was also effected by the aphid *Rhopalosiphum maidis* Fitch, in approximately 50% of the attempts.

Symptoms were clearly defined 8 weeks after inoculation but mild symptoms appeared somewhat earlier. The onset of clearly defined symptoms appeared to be correlated with lower glasshouse temperatures and shorter days.

It appears likely that the disease condition is caused by a virus, but investigations are being continued to determine the causal agent of the disease.

- N.E. GRYLLS

and

D.J. GOODCHILD

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C.S.I.R.O.
CANBERRA

A SUSPECTED VIRUS DISEASE OF WHEAT

In March of this year Drs. A.T. Wapley and E.C. Butler of Agricultural Research Institute, Wye, Kent, drew our attention to apparent leaf disorder among wheat varieties in breeding plots. Plants showing chlorotic streaks and irregular chlorotic striping were referred to Canberra for further study.

Step transmission to seedling wheat plants resulted in the chlorotic leaf streaks and prominent yellowing of the lower leaves, the varieties being Kent and Keston. The wheat varieties Keston and Glenworth developed somewhat milder symptoms as also did the variety Gabo, which was infected in only a small percentage of cases. Transmission to these wheat varieties was also effected by the aphid *Rhopalosiphum maidis* Fitch, in approximately 30% of the attempts.

Symptoms were clearly defined 6 weeks after inoculation with symptoms appearing somewhat earlier. The onset of chlorotic leaf symptoms appeared to be correlated with lower glasshouse temperatures and shorter days.

It appears likely that the disease condition is caused by a virus but investigations are being continued to determine the causal agent of the disease.

- W.E. GRYLLS

P.J. GOODWIN

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HELMINTHOSPORIUM LEAF SPOTS OF GRASSES IN QUEENSLAND:

Species of *Helminthosporium* isolated consistently from leaf spots of perennial prairie grass (*Bromus marginatus* Nees) and kikuyu grass (*Pennisetum clandestinum* Hochst.) have been identified by Dr. Ellis of the Commonwealth Mycological Institute as *Cochliobolus sativus* (Ito and Kuribasyahi) Drechs. ex Dastur and *Helminthosporium bicolor* Mitra respectively.

- D.S. TEAKLE.

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Nambour,
QUEENSLAND.

HELMINTHOSPORIUM LEAF SPOTS OF GRASSES IN QUEENSLAND

Species of *Helmintosporium* isolated consistently from spots of perennial prairie grass (*Themus capensis* Nees) and other grasses (Gramineae: *Themus capensis* Nees) have been identified by Dr. Ellis of the Commonwealth Agricultural Research Institute as *Helmintosporium* (no and *Helmintosporium*) Drechs., ex Deser. and *Helmintosporium* bicolor Mitsu. respectively.

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QUEENSLAND.

HELMINTHOSPORIUM SPECIES ON GRASSES IN N.S.W.:

Specimens of *Sporobolus elongatus* affected with false smut (*Helminthosporium ravenelii*) were received recently from Upper Horton on the north-western slopes of N.S.W. These plants had been sent in because it was suspected they were infected with ergot and may have been responsible for lameness in a steer which had been feeding in the area where they were collected.

Putterill (*Bothalia* 6, 347-378, 1954) suggests that *H. ravenelii* may not be as economically unimportant as is usually stated. Investigators have proved that ravenelin, a metabolic product of the parasite, causes cattle poisoning, of which false smut of *Sporobolus* has been suspected in South Africa and elsewhere.

Putterill also describes *Helminthosporium mediocre* on kikuyu grass (*Pennisetum clandestinum*). An examination of the previously unidentified *Helminthosporium*, which occurs commonly in the Sydney area causing a leaf spot of this grass, has shown that it agrees closely with *H. mediocre*.

-P.G. VALDER

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HELMINTHOLOGICAL SPECIES ON GRASSES IN N.S.W.

Specimens of *Sparganium angustifolium* collected with false
(*Stenanthus*?) were received recently from the
on the north-western slopes of N.S.W. These plants had been
because it was suspected they were infected with eggs and may have been
responsible for infection in a sheep which had been feeding in the
area they were collected.

Lawrence (1934) (1935) (1936) suggests that *H. tricus*
may not be as economically important as is usually stated. In
grasses have proved that *Stenanthus* is a serious pest of
cattle, causing considerable loss of weight and at times
causing a local attack and elsewhere.

There is also a serious *Stenanthus* problem in New South
Wales (*Stenanthus* *Stenanthus*). An examination of the grass
collected from *Stenanthus*, which occurs commonly in the
area causing a local pest of this grass, has shown that it agrees
with the *Stenanthus*.

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VEGETABLES

BACTERIAL SPOT OF PUMPKIN:

Lesions attributable to this disease were first observed on pumpkin fruit (Beaudesert Blue variety), at Kallangur in December 1958. They appeared as water soaked spots predominantly on the top side, sometimes coalescing to form larger areas of gummy rotted tissue. The spots were round with a creamy white exudate in the centre which hardened in the later stages of the disease. The leaves also appeared to have bacterial spot symptoms - round to angular brown spots surrounded by a yellow halo, later becoming papery but remaining intact in the leaf.

A species of Xanthomonas was isolated from the fruit lesions. This organism was reinoculated by pricking drops of a suspension in beef extract broth into pumpkin fruit of varying ages and keeping them in a moist atmosphere under a bell jar. After 7 days no infection was noted on the older fruit, but symptoms similar to those first observed in the field appeared on the young softer skinned fruit. The yellow slime producing organism was recovered on reisolation plates. Leaves were inoculated in a similar way, and water soaked spots, later becoming brown and surrounded by a yellow halo, were produced.

The pathogenicity tests, morphology, cultural and biochemical characteristics all point to the fact that this organism is identical with Xanthomonas cucurbitae (Bryan) Dowson, (Bryan, M.K., J. Agric. Res. 30, 385).

— E.A. WILSON

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BROWN ROT OF BEANS IN QUEENSLAND:

In December, 1958, a 1/10 acre planting of French bean var. Brown Beauty at Nambour in Southern Queensland was found to be affected by brown rot caused by Pseudomonas solanacearum E.F. Sm. This appears to be the first time the disease has been recorded in Australia.

Early symptoms exhibited by affected plants were leaf wilting, defoliation, and vascular discoloration. Eventually plants were reduced to upright brown stalks.

Isolation and inoculations by the needle-prick method into the stems of potted bean plants confirmed the pathogenicity of the bacterium. Reisolations yielded the brown rot organism. Inoculations into sunflower, tomato, and tree tomato (Cyphomandra betacea Sendt.) were also successful in producing wilt. Sterile potato plugs were discoloured black by the bacterium.

The high incidence of brown rot in the outbreak studied is attributed to the fact that the disease was prevalent in a crop of potato which preceded the French beans.

– D.S. TEAKLE.

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POWDERY MILDEW OF ROCKMELON:

Since its introduction to rockmelon culture in New South Wales, the variety P.M.R.45 has been resistant to the powdery mildew that attacks other varieties of rockmelons in this State. The agronomic qualities of P.M.R.45 combined with its resistance to powdery mildew have led to its widespread culture and it now comprises over 80% of the rockmelon acreage in New South Wales.

Last autumn, however, powdery mildew caused severe damage to crops of P.M.R.45 on the lower Murray Area and in the Murrumbidgee Irrigation Areas. This indicates that either a new race of cucurbit powdery mildew fungus has appeared in those areas or that another fungus is present. In the past, it has been assumed that the cucurbit powdery mildew in New South Wales was caused by the imperfect form of Erysiphe Cichoracearum D.C. Recently, however, Clare (Aust. J. Sci. 20,273, 1958) has claimed that, in Queensland, powdery mildew of rockmelon is caused by the imperfect form of Sphaerotheca fuliginea (Schlecht) Poll. The actual pathogen position in New South Wales is at present obscure as the perfect stage of the fungus has not been observed.

In the field on the lower Murray and on the M.I.A. the rockmelon varieties P.M.R.5 and P.M.R.6, bred in the United States for resistance to "race 2 of Erysiphe cichoracearum", were resistant to powdery mildew when growing alongside the susceptible P.M.R.45. P.M.R.5 and P.M.R.6 are now being used in the rockmelon breeding programme to obtain varieties resistant to the powdery mildew which has attacked P.M.R.45.

- R.J. CONROY

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SOME SOURCES OF INJURY TO PEA CROPS:

During the autumn and winter of 1959, work has been carried out in the Camden district, south of Sydney, on *Mycosphaerella* blight of peas (*Mycosphaerella pinodes* (Berk. & Blox.) Stone). In the course of this work, three sources of damage to pea crops have been noticed which in some cases, have caused considerable losses.

In the Camden district, winter peas are grown on ridges and slopes which do not normally receive heavy frosts. Light frosting, however, occurs in many crops and results in varying amounts of damage. The main damage seen this year occurred after a series of frosts on three successive days and resulted in severe marking of the pods in many crops. The marks consisted of roughly circular silvery patches in the pod wall, on both sides of the pod, and these patches often ran together to form a mosaic-like pattern. In severe cases, the epidermis of the pod was lifted.

A rather similar type of pod injury caused by hail was seen in another crop. In most cases the hail was not heavy enough to break the surface of the pod but resulted in a whitish mark in the pod wall, similar in appearance to the frost marking. However, the hail injury was confined mainly to one side of the pod and similar bruises were seen on pod stalks, stems and petioles.

In several crops, severe damage had been caused to many plants by foxes. Young pods had been torn open and the seeds eaten and, in trying to get the pods, the foxes had severely damaged the vines. Torn pods and broken vines were seen scattered through many crops. The Curator of Mammals at the Australian Museum has stated that it is quite common for foxes to eat plants, but that this appears to be a seasonal phenomenon and has been observed mainly in the autumn.

- J. WALKER

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FRUITTHE OCCURRENCE OF EUTYPA ARMENIACAE HANSFORD AND
CARTER IN NEW ZEALAND:

For a number of years symptoms similar to those described for apricot 'gummosis' in Australia have been observed in New Zealand in the Heathcote Valley, Christchurch, and in Central Otago. During the late autumn in 1948, wood from apricot branches from trees in the Heathcote Valley were collected and brought to the laboratory of the Plant Diseases Division, Auckland. Cultures typical of Eutypa armeniacae were obtained from this diseased wood. The diseased branches were then placed under a hedge at the Division and in late autumn of the following year perithecia of Eutypa developed on the wood. The cultures gave positive results when inoculated into young apricot trees.

This is the first record of this disease outside Australia; its occurrence can be explained by the fact that in the early part of this century nursery stock was brought into New Zealand from Australia.

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